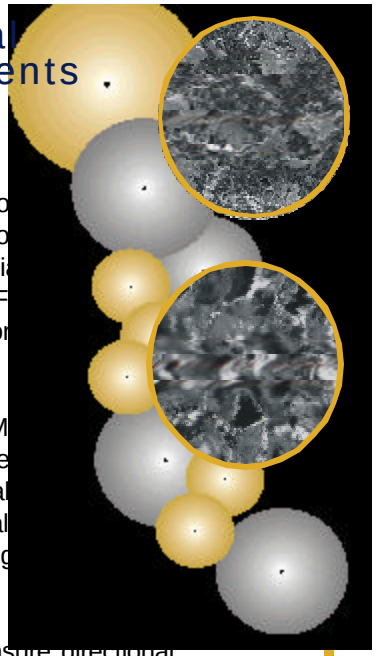


The Optical Measurements Facility (OMF) was developed as a national resource fo characterizing the o properties of materi Located in the Air F Research Laborato Materials and Manufacturing Directorate, the OM measures, correlate analyzes the optical behavior of material the ultraviolet throug infrared.

The OMF can measure directional reflectance, emittance and scattering properties of materials at various angles and operational temperatures and in various polarization states. This offers users the opportunity to correlate and control the functional relationships in optical and physical properties.

The Facility was established in 1991 to provide the materials community and the Department of Defense with reproducible, accurate results and a reasonable sample throughput. To maintain accuracy, the facility operates in a 10,000-class cleanroom with constant 40% relative humidity which aids in keeping optical components clean, provides increased stability of the instruments, and reduces corrosion.

For over a decade, OMF has been measuring and characterizing properties of materials in support of national defense programs and the aerospace industry. The facility's unique capabilities coupled with years of expertise in optical properties offer distinctive materials development opportunities.

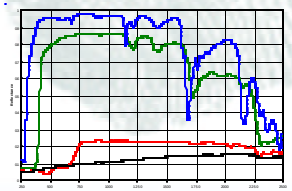
Contact OMF at (937) 255-3839

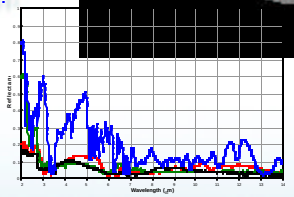
Materials and Manufacturing Directorate
AFRL/MLBT
2941 P Street
Wright-Patterson AFB, OH 45433-7750
Email: afrl.ml.omf@wpafb.af.mil

Optical Measurements Facility

THE TRUE MEASURE IN OPTICAL CHARACTERIZATION

Defining Optical Fingerprints of Materials





UV-VIS-NIR Reflectance and Transmittance

- Transmission 0.185 – 3.2 µm
- Directional Reflectance 0.25 – 2.5 µm
- Spectral Resolution 0.05 – 5nm (UV-VIS), 0.2 – 20 nm (NIR)
- Angle of Incidence 8°, 10° – 70°
- Polarization and Temperature Control
- Sample Size 1-in.-dia., 0.5 in. thick

IR Reflectance and Transmittance

- Transmission 2.0 – 20.0 µm
- Directional Reflectance 2.0 – 15.0 µm
- Spectral Resolution 4 cm^{-1}
- Angle of Incidence 8°, 10° – 85°
- Polarization and Temperature Control
- Sample Size 1-in.-dia., 1.0 cm thick

Directional Emittance

- Wavelength 3.0 – 14.0 µm
- Angle of Incidence 10° – 88°
- Incident Polarization s, p, or variable
- Sample Temperature <72° – 450°F
- Sample Size 12-in.x 12-in., <1.0-in. thick

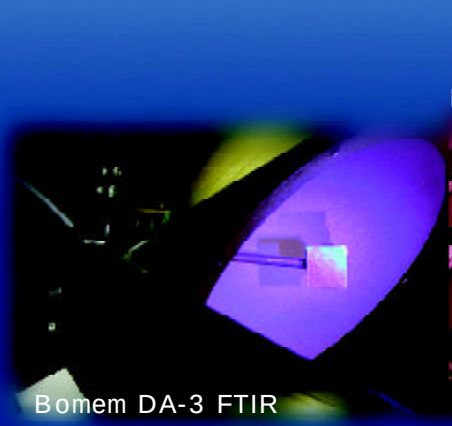
Laser and Broadband Scatter

Laser

- Sources: HeCd metal vapor 0.325µm
  HeNe 0.6328µm
  Nd:YAG 1.06µm
  HeNe 3.39µm
  CO_2 10.6µm
- eflectance capability at 0.633, 1.06, 0.6 µm
- cidence 0° – 88°
- Angle of Reflectance 0° – 89°
- Polarization s, p, or variable
- Sample Temperature -90° to 400°F

Broadband

- Wavelength 0.25 – 14 µm
- Spectral Resolution 1% of wavelength
- Angle of Incidence 0° – 85°
- Angle of Reflection 0° – 89°
- Polarization s, p, or variable
- Sample Temperature -90° to 400°F

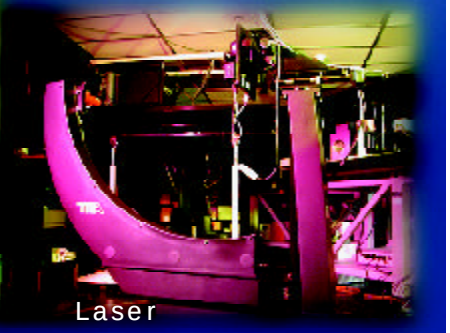


Bomem DA-3 FTIR Spectrometer

Perkin-Elmer Lambda 9 Spectrometer

Directional Emissometer

Zeiss Stereo Microscope



Laser Scatterometer